

# Wingfield Environmental Inc.

JUL 05 2011

P.O. Box 8957, Gray Tennessee 37615

June 29, 2011

Woody Smith  
Division of Water Pollution Control  
**Department of Environment and Conservation**  
Knoxville Field Office  
3711 Middlebrook Pike  
Knoxville, TN 37921

RE: *General NPDES Permit for Discharge of Treated Groundwater Associated with UST Remediation  
Whole Effluent Toxicity Dilution Calculations for NPDES TNG830166  
By-Lo #1, 1245 Broadway Drive, Bean Station, Grainger County, Facility I.D. #2-290013*

Dear Mr. Smith:

On behalf of our client, Coffman Oil Company, we at Wingfield Environmental (WEI) would like to submit whole effluent toxicity testing calculations for the NPDES sampling. On page 8 of the permit Section 4 Effluent Limits, the dilution factor can be calculated. The 7Q10 (Qs) was obtained from <http://water.usgs.gov/osw/streamstats/tennessee.html>. The 7Q10 for the unnamed tributary is 0.000898 ft<sup>3</sup>/sec or 0.4 gallons per minute using the discharge point Latitude 36.3237 and Longitude -83.2784 (see attached printout). The calculation of dilution factor is as follows:

$$DF = Qs + Qw/Qw,$$

where Qw is average treated groundwater and Qs is a receiving stream low flow (7Q10). Qw for the site is 2.5 gallons per minute. Qs for the site is 0.4 gallons per minute.

$$DF = 0.4 + 2.52/2.5 = 1.4$$

The dilution factor greater than 500 requires no wet toxicity testing. The dilution factor for this site is 1.4. As indicated on Page 8-9 of the UST Remediation Permit, "Discharges into low flow receiving streams and streams that provide dilution factor up to 100:1 will be required to comply with the numerical effluent limitation for IC25. Therefore, we will perform IC25 toxicity testing.

If you have any questions concerning this site, please call us at (423) 323-7969. Thank you.

Sincerely,



Chris Christian, P.G.  
Vice President

CC/sf  
Attachment

cc: Mr. Wayne Clifford - Knoxville TDEC Division of Underground Storage Tanks  
Nashville  
file/2106

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# Tennessee StreamStats

## StreamStats Unlogged Site Report

Date: Wed Jun 29 2011 13:23:22 Mountain Daylight Time

Site Location: Tennessee

VAD83 Elevation: 961.257 (961.0-965)

VAD83 Longitude: -83.8889 (-83.86-83.92)

VAD83 Latitude: (0.0000)

VAD83 Longitude: (0.0000)

Drainage Area: 0.03 mi<sup>2</sup>

### Low Flow Region Basin Characteristics

0.09% Low Flow Centralized Basin (0.03 mi<sup>2</sup>)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	0.03 (below min value 2.63)	2.63	2572
Regression Index (days per lag cycle)	31	35	875

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

### Best Flow Region Basin Characteristics

38% Multivariable Area (0.03 mi<sup>2</sup>)

Parameter	Value	Regression Equation Valid Range	
		Min	Max
Contributing Drainage Area (square miles)	0.023 (below min value 0.2)	0.2	2000
Stream Slope (feet per mile)	0.23	2.3	100
Tennessee Climate Factor, 2 Year (Precipitation)	2.33	2.03	2.33

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

### Low Flow Region Streamflow Statistics

Statistic	Flow (cfs)	Prediction Error (percent)	Equivalent years of record	95-Percent Prediction Interval	
				Minimum	Maximum
Q10	0.0013				
Q2	0.0017				
Q5	0.0026				
Q10	0.0039				

### Best Flow Region Streamflow Statistics

Statistic	Flow (cfs)	Prediction Error (percent)	Equivalent years of record	95-Percent Prediction Interval	
				Minimum	Maximum
PK2	2.13		1.7		
PK5	1.23		2.6		
PK10	1.06		3.4		
PK25	2		4.5		
PK50	28.2		9.4		
PK100	39.2		5.3		
PK500	18.6		3.5		